

In the Claims:

1. Method for purification of contaminated water by hydrate formation and separation of hydrates from contaminated water enriched with contaminants characterized in that the water to be purified is passed via a first pipe into a first container with suitable pressure and temperature conditions to obtain hydrate formation, in said container the water is mixed with a hydrate-forming compound which is supplied via a second pipe some of the mixture of hydrate and contaminated water is recycled to said first container via third pipe as hydrate-forming seed, and the rest is passed to a separator where the mixture is separated into contaminated water and pure hydrate, the hydrate is passed to a second container via a fourth pipe, in said second container the temperature is raised so that the hydrate dissociates into pure water and hydrate-forming compound, the hydrate-forming compound from said second container is passed back to the first container for hydrate formation via said second pipe and the pure water is taken out as a product.

2. Method according to Claim 1,
characterized in that the contaminants comprise one or more components selected from the group consisting of hydrocarbons, organic and inorganic salts, dust, mud, metals, sand, gas, radioactive compounds, and biological material.

3. Method according to Claim 1,
characterized in that the contaminants which have been separated off are handled by recirculation to upstream process steps or deposition/disposal.

4. Method according to Claim 1,
characterized in that hydrate formation is carried out in several steps by subjecting the contaminated water from the separator to repeated hydrate formation processes in series until the concentration of contaminants in the contaminated water is too high for further hydrate formation.

5. Method according to Claim 1,
characterized in that the harvested hydrates from the separator are subjected to a washing step prior to dissociation to pure water and hydrate forming gas.
6. Method according to Claim 1,
characterized in that the hydrate forming compound supplied to the first container through the second pipe is selected from lower hydrocarbons, CO₂, halogenated hydrocarbons, wherein halogen is selected from chlorine and fluorine, tetrahydrofuran, ethylene oxide, noble gases selected from helium, neon, argon, xenon, krypton, sulphur hexafluoride, dinitrogen oxide, preferably C₁-C₅ hydrocarbons or CO₂, more preferably methane, ethane, propane, CO₂, most preferably methane or CO₂.
7. Method according to Claim 1,
characterized in that the pressure and temperature conditions are:
T < 30°C, P > 1 bar, preferably T < 20°C, P > 5 bar, most preferably T < 10°C, P > 20 bar.
8. Method according to Claim 1,
characterized in that the hydrate particles which are supplied through the third pipe to the hydrate formation step have a diameter of maximum 3 mm, preferably maximum 500 µm, still more preferably maximum 100 µm.
9. Method according to Claim 1,
characterized in that the hydrate harvesting process is selected from the group consisting of sedimentation, filtration, centrifugation, flotation.
10. Method according to Claim 1,
characterized in that the hydrates dissociate through an increase in temperature and/or reduction in pressure.
11. Method for purification of gas,

characterized in that the gas is bubbled through water for transfer of gaseous contaminants to the water, prior to the water being subjected to a method for purification of water according to Claim 1.

12. Device for purification of contaminated water,

characterized in that it contains a first pipe for water to be purified, leading into a first container, a fifth pipe leading from said first container to a separator, a sixth pipe leading from said separator to a deposit area for contaminated water, a fourth pipe leading from said separator to a second container, a second pipe leading from said second container to said first container, a seventh pipe from said second reactor for removal of purified water, and one or more heat exchangers providing cooling in the first container and heating in the second container.

13. Device according to Claim 12,

characterized in that it further comprises additional devices according to Claim 12 in series in a sufficient number to obtain a satisfactory concentration increase of the contaminants.

14. Device for purification of air/gas,

characterized in that it comprises the device according to claim 13, where the seventh pipe for purified water leads into a storage tank serving as a washing chamber for polluted air/gas, and a pipe for contaminated air/gas leading into said storage tank and another pipe for purified air/gas leading out of said storage tank.